

The freeliving marine nematode genus *Sabatieria* (Nematoda: Comesomatidae). II. Redescriptions of five European species

H. M. Platt

Department of Zoology, British Museum (Natural History), Cromwell Road, London SW7 5BD

Introduction

This is the second in a series of papers examining in detail several species of *Sabatieria* in preparation for a general review of the genus. It contains further data on *S. celtica* Southern, 1914 (including new specimens from the type locality), *S. breviseta* Stekhoven, 1935, *S. punctata* (Kreis, 1924), *S. longispinosa* Lorenzen, 1972 and *S. elongata* Jayasree & Warwick, 1977. All species are fully illustrated with line drawings and photographs. Methods and abbreviations are as given in Platt (1982, 1983).

Systematic descriptions

Sabatieria celtica Southern, 1914

Figs 1–5

MATERIAL STUDIED. 1♀ from Clew Bay, Co. Mayo, Ireland BM(NH) 1915.1.1.15, labelled '♀ co-type', collected by Southern (1914) from sand and shells at 40 m. 2♂♂, 2♀♀ and 2 juveniles from Clew Bay, BM(NH) 1982.7.82–84, collected July 1980 from shelly gravel at 17 m, about 0.5 km east of harbour on Clare Island. 5♂♂ and 1♀ from Strangford Lough, Northern Ireland, BM(NH) 1981.12.124, 1982.7.85–88, high tide station (see Platt, 1977). Several males and females from Cullercoats, Northumberland coast, England, BM(NH) 1980.5.62, collected by Dr R. M. Warwick.

MEASUREMENTS (in µm), DEMANIAN RATIOS AND MERISTIC DATA

Males (♂1–♂5 from Strangford Lough and ♂6–♂7 from Clew Bay respectively). Total body length: 2135; 1800; 2030; 1770; 2085; 2940; 2560. Demanian ratio a: 39; 38; 41; 31; 37; 43; 44. Demanian ratio b: 9.2; 7.5; 9.0; 7.4; 7.8; 10.2; 9.4. Demanian ratio c: 14.4; 12.8; 13.2; 12.4; 14.5; 14.3; 13.0. R3 sensilla length: 9; 10; 9.5; 8; 8; 19; –. Head diameter: 16; 16; 17; 18; 17; 20; 20. Amphid diameter: 12; 11; –; 11; 11; 14; –. Amphid c.d.: 19; 17; 21; 19; 19; 22; –. Oesophagus length: 233; 241; 226; 241; 268; 287; 273. Maximum body diameter: 55; 48; 50; 57; 56; 69; 58. Spicule length (chord): 46; 47; 51; 55; 50; 60; 56. Anal body diameter: 45; 37; 42; 44; 59; 50; 47. Number of preloacal supplements: 21; 16; 16; 19; –; 20; 21. Cloaca to anterior supplement (β): 255; 202; 238; 262; –; 215; 228. Tail length: 148; 141; 154; 143; 144; 205; 197.

DESCRIPTION. This species has been redescribed by Lorenzen (1972): the following information is based on recent specimens from Ireland.

Cuticle has lateral differentiation of larger and less closely spaced dots (Fig. 4). In the oesophagus and tail region, the lateral dots are irregularly arranged but in the mid-body region they appear to be arranged in transverse rows. Short sublateral somatic setae present throughout the body. Cervical somatic setae are slightly larger than the general somatic setae, especially in the Clew Bay specimens. The first, anteriormost cervical seta always appears to be situated ventro-sublaterally. R3 sensilla 45–62% c.d. in Strangford Lough specimens, 80–95% c.d. in Clew Bay specimens. Amphids describe $2\frac{1}{2}$ turns, 58–69% c.d. wide (males). Excretory pore at 62–66% of oesophagus length: lateral supplementary cells not detected in the males. Tail conico-cylindrical, 3.1–4.1 a.b.d.: conical part about 50% of total.

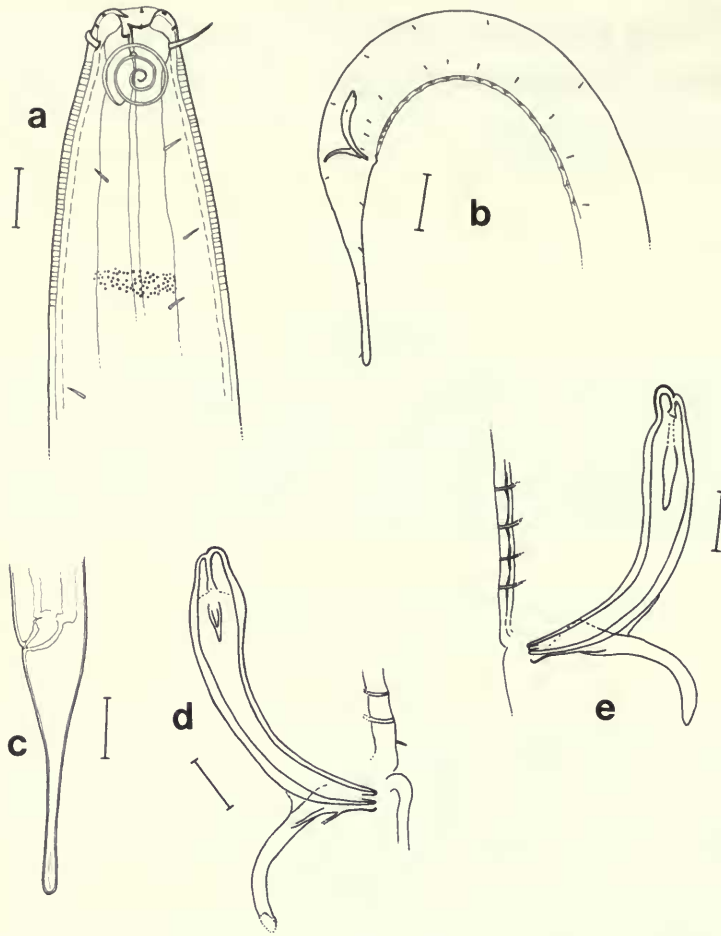


Fig. 1 *Sabatieria celtica* from Strangford Lough: (a) σ 1 head; (b) σ 1 posterior region; (c) φ 1 tail; (d) σ 3 copulatory apparatus; (e) σ 5 copulatory apparatus. Bar scales: b, c=40 μ m; others = 10 μ m.

Spicules equal, curved: 1.2–1.3 a.b.d. as chord. Gubernaculum apophysis distinctly curved, about half the length of the spicule, but often the exact proximal extremity is difficult to distinguish. Short precloacal spine and 16–21 tubular supplements, occupying 11.2–14.8% of total body length in Strangford specimens but only 7.3 and 8.9% in those from Clew Bay. Two opposed testes: anterior left, posterior right of gut.

Ovaries opposed, outstretched: anterior left, posterior right of gut.

REMARKS. The specimens described here, including those from the type locality, are identical with those described by Lorenzen (1972) from sublittoral sediment near Helgoland. The only surviving representative of Southern's (1914) original type material is the co-type female, but this is in poor condition and almost completely flattened. However, what characters that are visible, such as the amphid, cuticle pattern (Fig. 4g–h) and tail shape agree with the new material. Southern apparently overlooked the precloacal supplements in his male, but this is easily done if the worm is not viewed exactly from a lateral aspect. The only remaining difference between Southern's description and the specimens described here and by Lorenzen is the shape of the distal tip of the spicules—Southern shows them as being distinctly wedge-shaped (Fig. 2c). It must be concluded that Southern's specimen was anomalous in

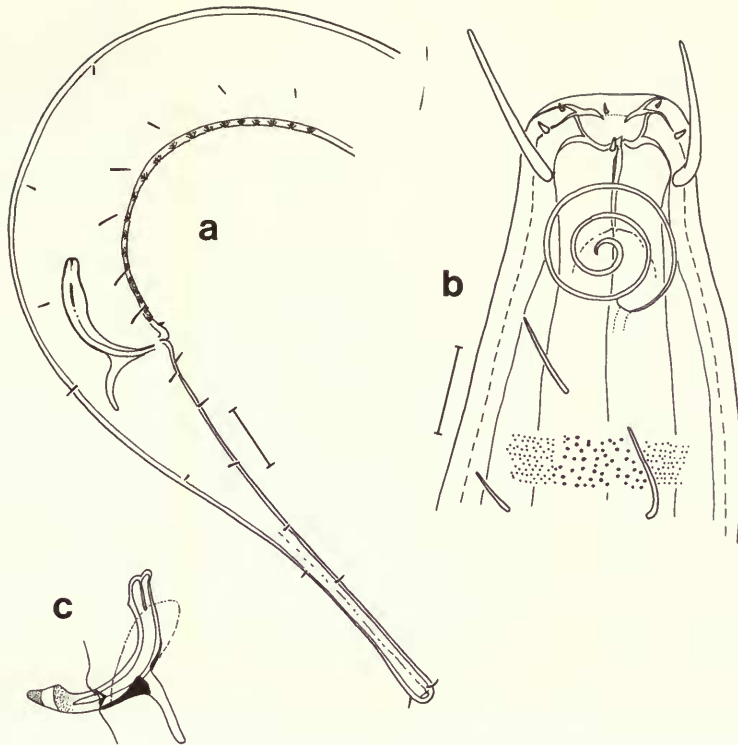


Fig. 2 *Sabatieria celtica* from Clew Bay: (a) σ_7 posterior region; (b) σ_6 head; (c) spicule of Southern's male (after Southern, 1914). Bar scales: a = 30 μm ; b = 10 μm .

this respect. Interestingly enough, several other species described by Southern (1914) from Clew Bay were also represented in my material, tending to support the *Sabatieria* specimens as being conspecific.

The material from Helgoland described by Lorenzen (1972) showed a wide range in the intraspecific variation of certain characters, especially the relative R3 sensilla length (64–124% c.d.). As observed by Jensen (1979), this is unusual for *Sabatieria* species, particularly in specimens from the same locality. The Irish material also showed variation in this character, from 45–95% c.d. overall, although the within-habitat variation does not appear to be as great as Lorenzen reported for his material. Nevertheless, it underlines the dangers of relying too heavily on morphometric data rather than meristic or detailed anatomical characters.

Pearse, Humm & Wharton (1942) recorded *S. celtica* from intertidal sand at Beaufort, North Carolina, U.S.A. However, a detailed investigation of material collected in August 1980 from the same locality failed to reveal any *Sabatieria* specimens resembling *S. celtica*, although two other *Sabatieria* species were encountered, as will be described elsewhere.

Sabatieria breviseta Stekhoven, 1935

Figs 6–11

MATERIAL STUDIED. 3 $\sigma\sigma$ and 2 $\rho\rho$ on slides BM(NH) 1982.7.69–70. Found in dead *Diastylis rathkei* (Krøyer) (Crustacea: Cumacea) taken from Swansea Bay, May 1975, collected by Dr R. M. Warwick.

MEASUREMENTS (in μm) AND DEMANIAN RATIOS

Males (σ_1 – σ_3 respectively). Total body length: 1160; 1105; 1220. Demanian ratio a: 33; 37; 39. Demanian ratio b: 8.1; 7.9; 8.1. Demanian ratio c: 11.1; 11.9; 11.6. R3 sensilla length: 4; 4; 3. Head

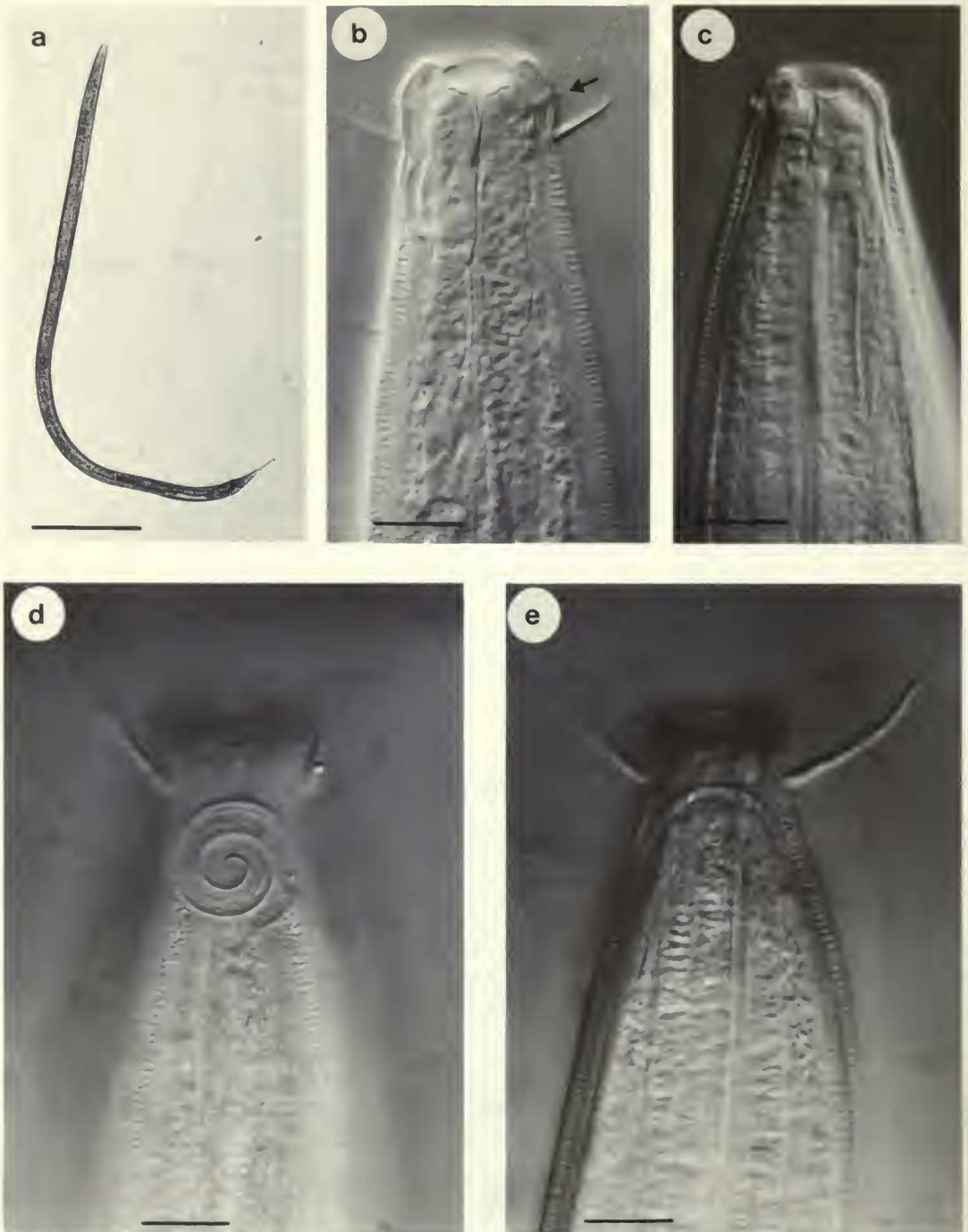


Fig. 3 *Sabatieria celtica* from Strangford Lough (a–c) and Clew Bay (d–e): (a) entire σ ; (b) head showing R2 (arrow) and R3 sensilla; (c) head showing buccal dentition; (d) head showing amphid; (e) head showing R3 sensilla. Bar scales: a = 300 μ m; others = 10 μ m.

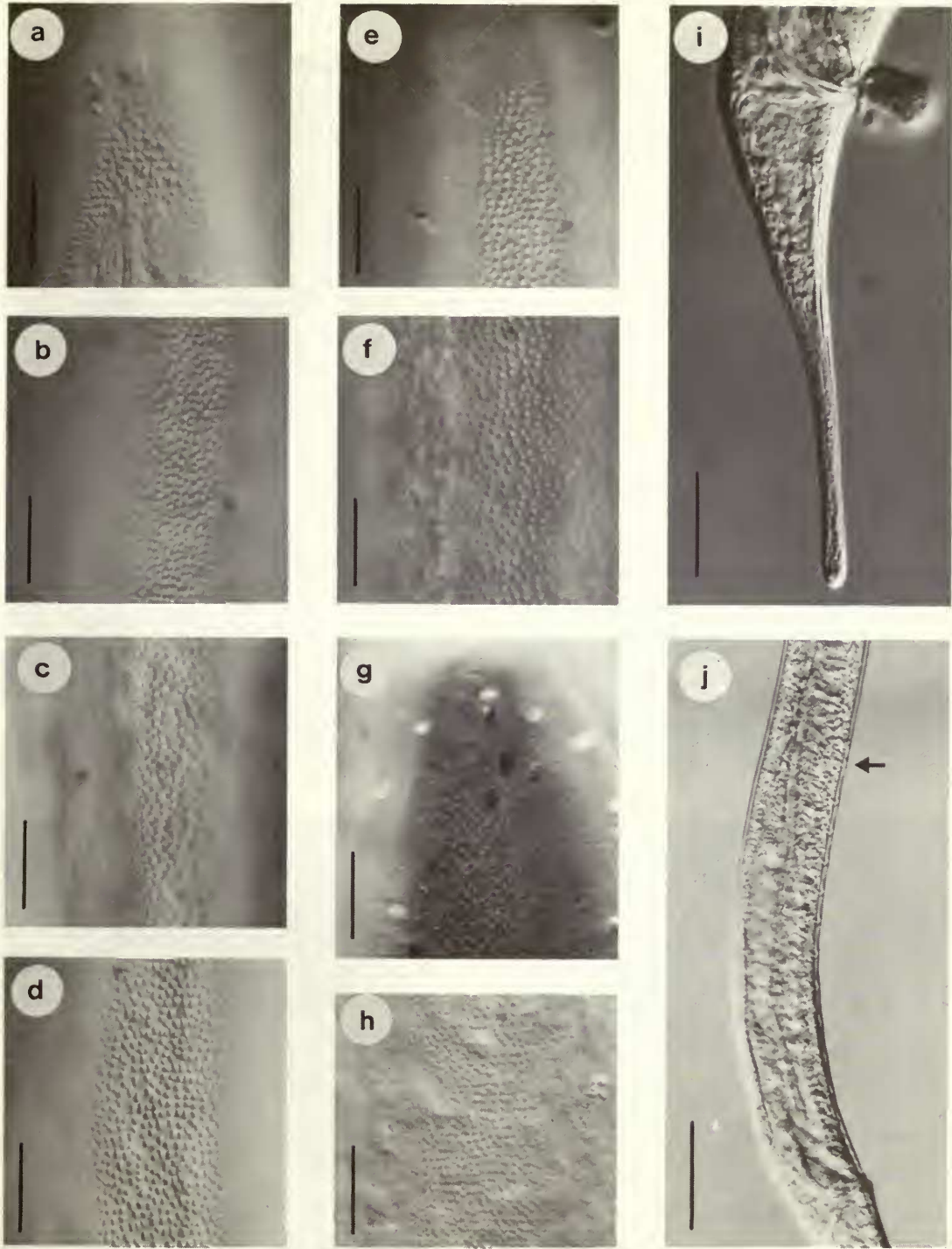


Fig. 4 *Sabatieria celtica* from Strangford Lough (a-d and i-j) and Clew Bay (e-h): (a) cuticle immediately post-amphid; (b) cuticle mid-body; (c) cuticle mid-body but showing sub-lateral pattern; (d) cuticle in cloacal region; (e) cuticle immediately post-amphid; (f) cuticle mid-body; (g) cuticle of Southern's cotype ♀ immediately post-amphid; (h) cuticle of Southern's cotype ♀ mid-body; (i) ♂ tail; (j) anterior cloacal region showing supplements, anteriormost arrowed. Bar scales: i = 30 µm; j = 50 µm; others = 10 µm.

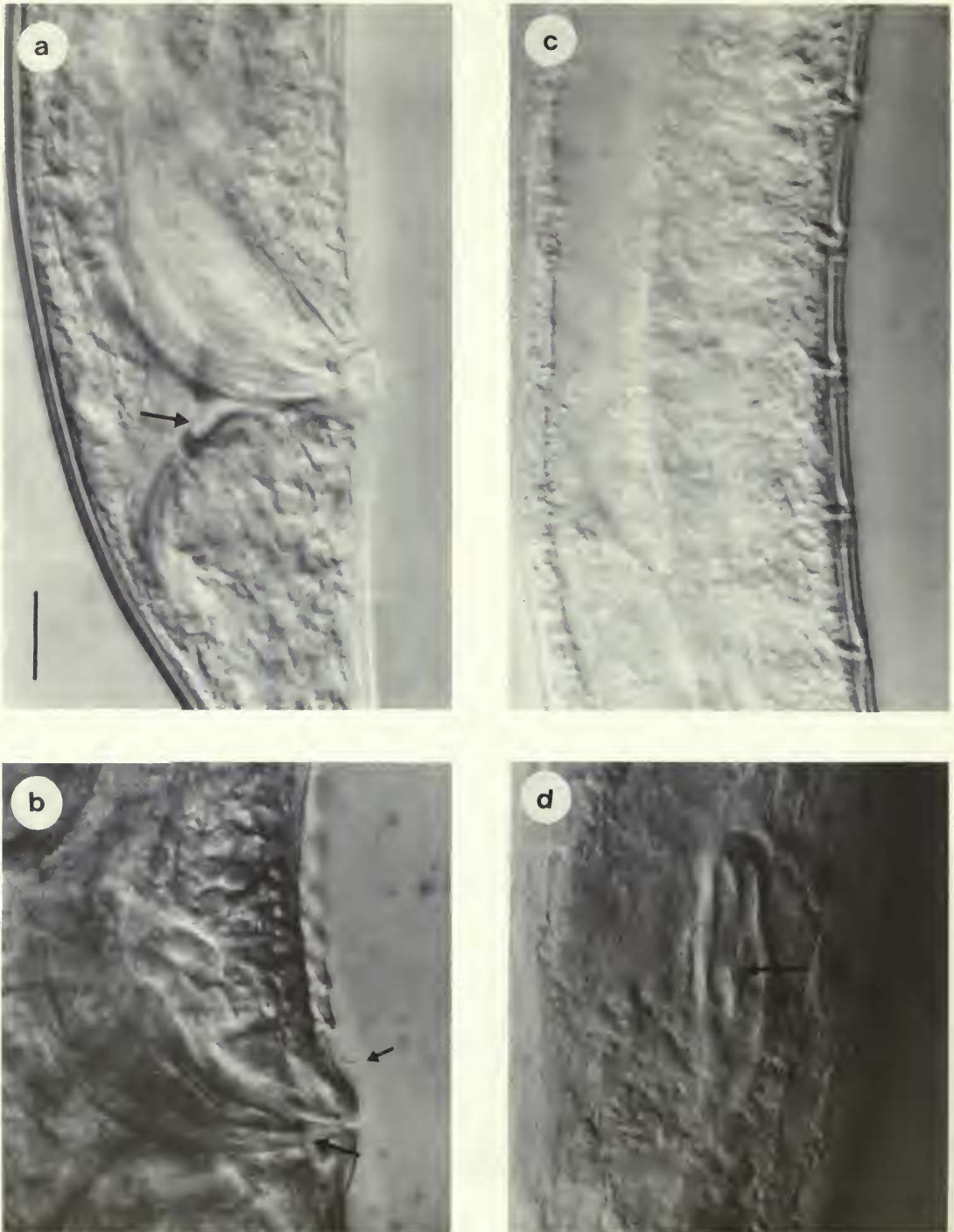


Fig. 5 *Sabatieria celtica* from Strangford Lough: (a) cloacal region showing median piece of gubernaculum (arrow); (b) cloacal region showing precloacal spine (small arrow) and spicule tip (large arrow); (c) detail of anterior precloacal supplements; (d) proximal end of spicule showing median list (arrow). Bar scales: for all, as in a = 10 μ m.

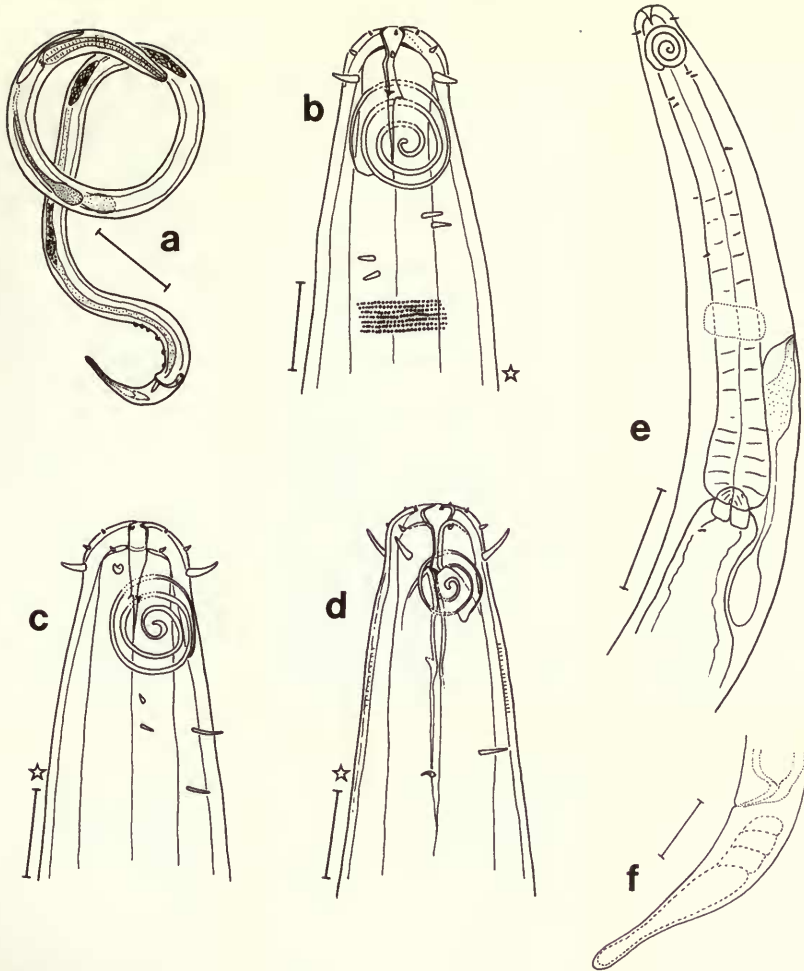


Fig. 6 *Sabatieria breviseta* from Swansea Bay: (a) ♂3 entire body; (b) ♂1 head; (c) ♀2 head; (d) ♀1 head; (e) ♂1 anterior region; (f) ♀2 tail. Stars indicate ventral side. Amphids in b, c and d shown in part with hatched lines to avoid obscuring buccal cavity details. Bar scales: a = 100 μ m; e, f = 30 μ m; others = 10 μ m.

diameter: 12; 12; 12. Amphid diameter: 12; 11.5; -. Amphid c.d.: 14; 14.5; -. Oesophagus length: 144; 140; 150. Posterior oesophagus c.d.: 32; 29; 31. Maximum body diameter: 35; 30; 31. Spicule length (chord): 34; 34; 33. Anal body diameter: 28; 26; 27. Cloaca to anterior supplement (α): 74; 89; 74. Cloaca to anterior supplement (β): 106; 108; 113. Tail length: 105; 93; 105.

Females (\varnothing 1- \varnothing 2 respectively). Total body length: 1195; 1340. Demanian ratio a: 36; 38. Demanian ratio b: 8.1; 8.6. Demanian ratio c: 12.0; 13.1. R3 sensilla length: 4.5; 4.5. Head diameter: 11; 11. Amphid diameter: 7.5; 7.5. Amphid c.d.: 12.5; 13. Oesophagus length: 148; 156. Posterior oesophagus c.d.: 32; 33. Maximum body diameter: 33; 35. Anal body diameter: 25; 28. Tail length: 100; 102. Vulva to anterior: 595; 687. Vulva c.d.: 35; 37.

DESCRIPTION. Posterior half of mid-body region generally about 10% narrower than the anterior part: the diameter anterior to the mid-point has been used to calculate the 'a' ratio. Cuticle punctated: fine lateral dots in transverse rows, slightly larger and more visible than the sublateral ones, especially in oesophagus and tail regions. Dots in the mid-body region often beyond resolution. 20 rows per 10 μ m in lateral field throughout body. Short scattered 2-3 μ m sublateral somatic setae throughout body. In males, there is a ventro-sublateral pair

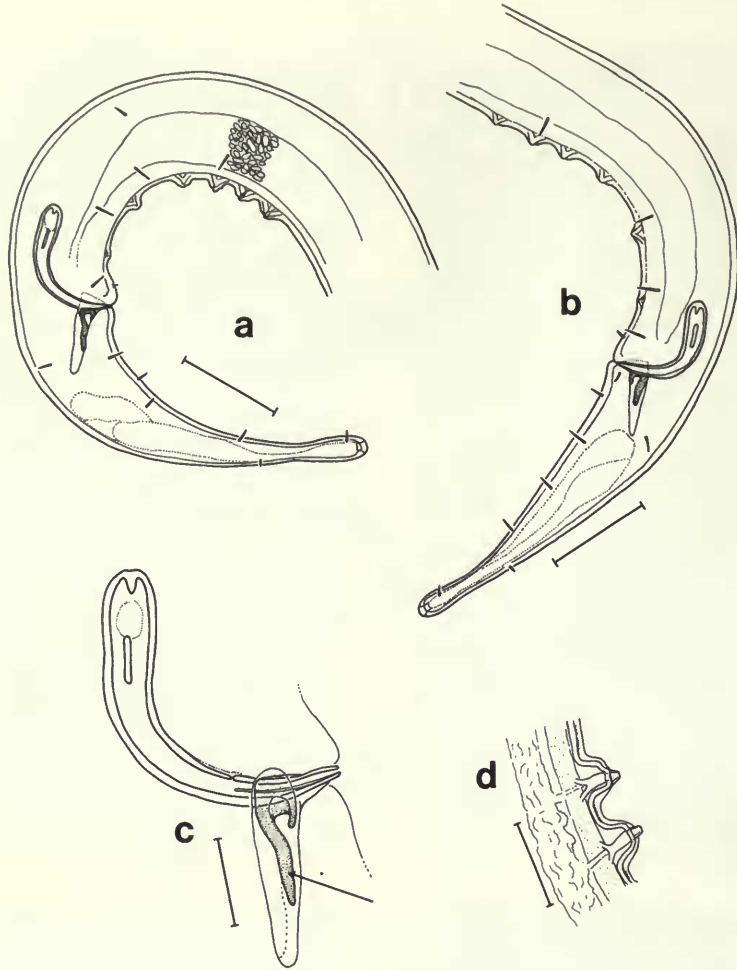


Fig. 7 *Sabatieria breviseta* from Swansea Bay: (a) ♂1 posterior region; (b) ♂2 posterior region; (c) ♂1 copulatory apparatus, median piece arrowed; (d) detail of two of ♂3 precloacal supplements. Bar scales: a, b = 30 μ m; c, d = 10 μ m.

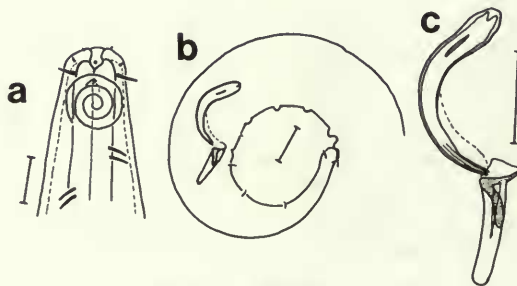


Fig. 8 *Sabatieria breviseta* from Helgoland, from an unpublished drawing by Dr P. Jensen from Lorenzen's (1974) Helgoland material (slide A62/4): (a) ♂ head; (b) ♂ posterior region; (c) copulatory apparatus. Bar scales: a = 10 μ m; b, c = 20 μ m.

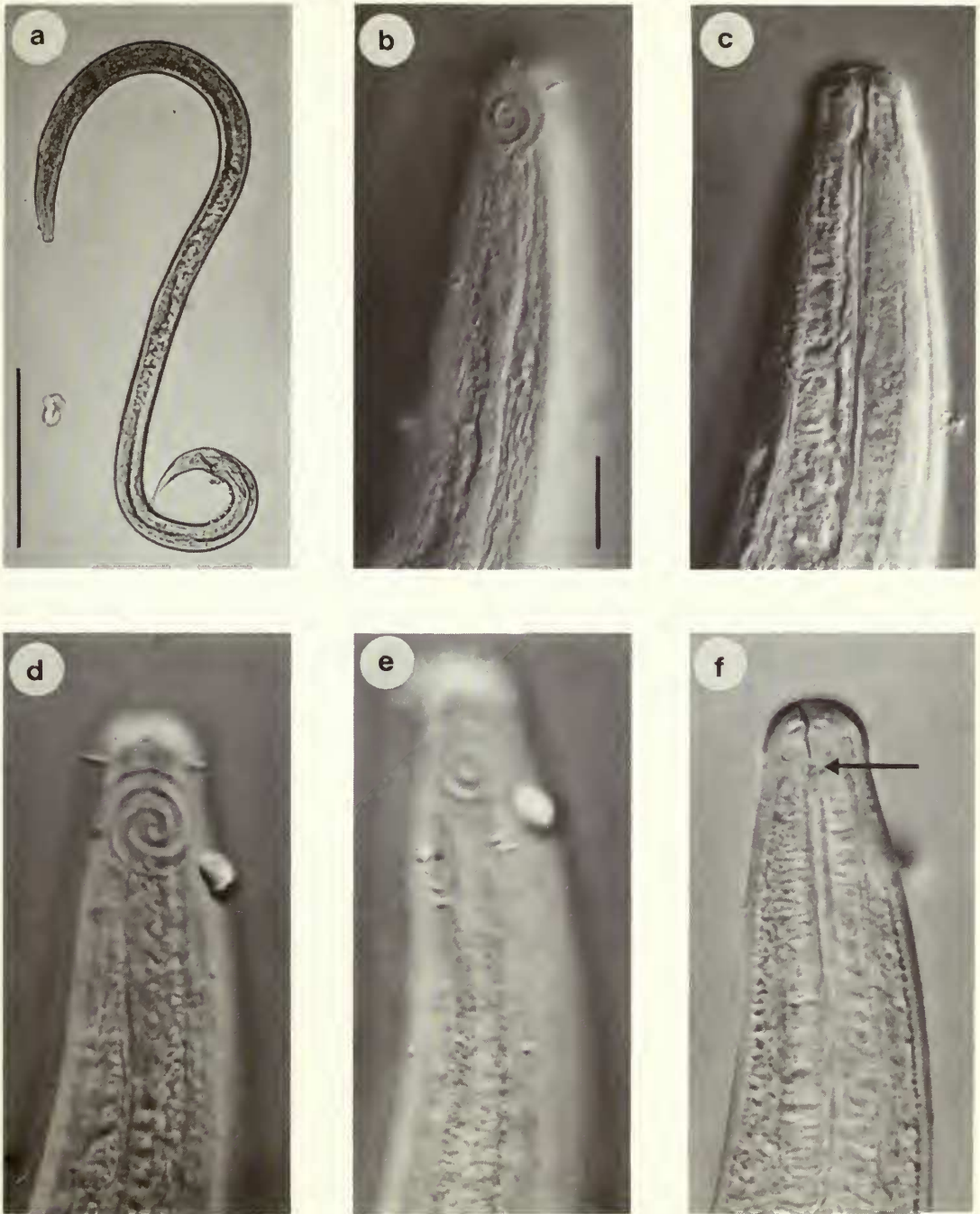


Fig. 9 *Sabatieria breviseta* from Swansea Bay: (a) entire σ ; (b) f amphid; (c) f buccal cavity; (d) σ amphid; (e) σ cervical setae, also note cuticle pattern; (f) σ buccal cavity showing tooth (arrow). Bar scales: a=200 μm ; for others, as in b=10 μm .

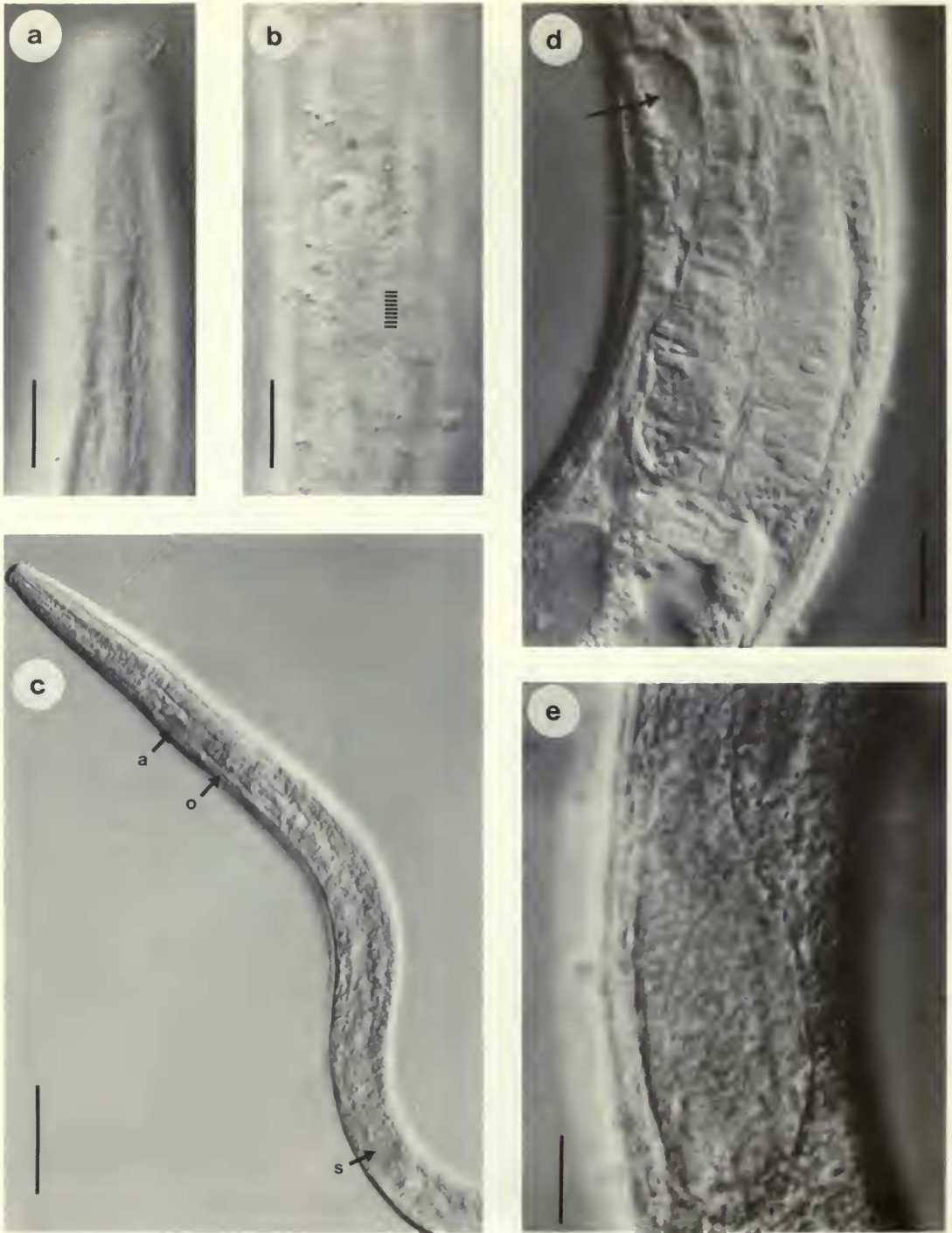


Fig. 10 *Sabatieria breviseta* from Swansea Bay: (a) cuticle post-amphid; (b) cuticle mid-body, difficult to distinguish but frequency of the transverse rows of lateral dots shown by the bars; (c) ♂ anterior region showing excretory ampulla (a), end of oesophagus (o) and position of supplementary cell (s); (d) posterior oesophagus region showing excretory ampulla (arrow); (e) detail of supplementary excretory cell. Bar scales: c = 50 μ m; others = 10 μ m.

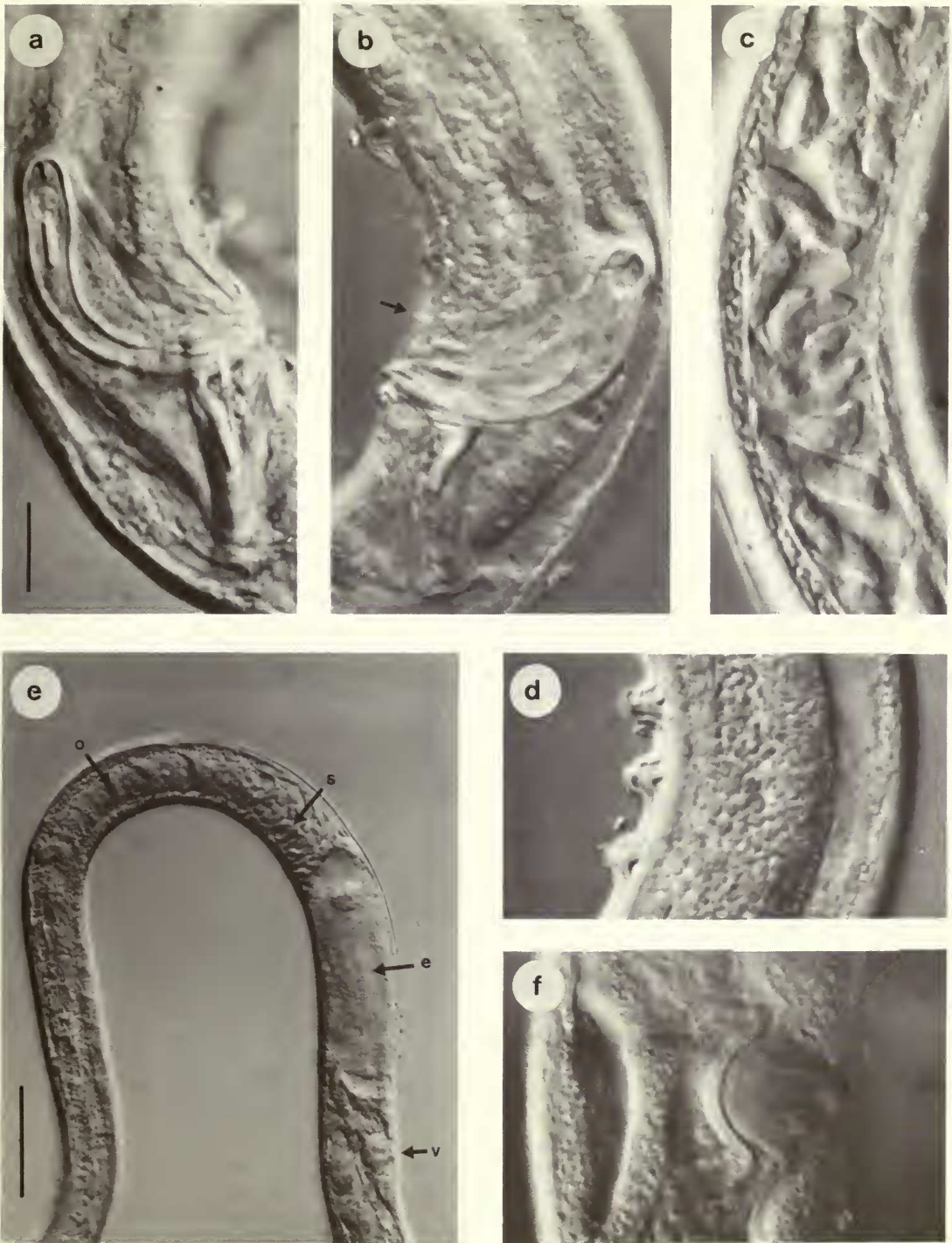


Fig. 11 *Sabatieria breviseta* from Swansea Bay: (a) copulatory apparatus; (b) copulatory apparatus of another specimen showing slightly different appearance of gubernaculum median piece, preloocal spine (arrow) and first two supplements; (c) sperm in σ ; (d) detail of three anterior supplements; (e) mid-body region of φ showing outstretched ovary (o), spermatheca with sperm (s), elongated egg (e) and vulva (v); (f) detail of vulva region. Bar scales: e = 50 μ m; for others, as in a = 10 μ m.

of cervical setae just posterior to amphid and a dorso-sublateral pair slightly posterior to them (Figs 6b, c and 9e): absent in females (Fig. 6d). R1 and R2 sensilla conical but conspicuous. R3 sensilla 3–4 μm in males (30% h.d.), 4.5 μm in females (40% h.d.). Amphids describe $3\frac{1}{2}$ turns in males, but only 3 turns in females: about 80–85% and 60% c.d. respectively. Anterior part of buccal cavity small and expanded and generally cup-shaped, but in certain specimens it can appear almost conical (Fig. 6b). Posterior tubular section has a conspicuous dorsal projection (tooth?) at its base (Fig. 9f). Oesophagus has an expanded posterior part. Nerve ring at about 60% of oesophagus length. Excretory pore at 64–70% of oesophagus length with a conspicuous ampulla (Fig. 10d). Ventral gland conspicuous. In males, there are also two large lateral supplementary cells situated just over two oesophagus lengths from the anterior with ducts leading anteriorly (Figs 10c, e), but their termination could not be detected: these supplementary cells may not always be easily detectable. Tail 3.6–4.0 a.b.d., conico-cylindrical: conical part about 70% of total but an actual cylindrical part is almost non-existent before the swollen tip. Caudal glands conspicuous and lying entirely in the tail.

Spicules equal, curved: 1.2–1.3 a.b.d. as chord; 1.5–1.6 a.b.d. (40–44 μm) as arc. Gubernaculum surrounds distal ends of spicules and has paired dorso-caudally directed apophyses, each about 18 μm long (about 53% of spicule chord length) and with a prominent cuticularised median piece (Figs 11a, b): gubernaculum median piece is less distinct when not viewed from a lateral aspect. Ventral spine situated about 7–8 μm precloacally. Six prominent precloacal supplements, the first 14–17 μm (α) from the cloaca and not as conical as the others: anteriormost three (sometimes four) closer together than the others. Anterior supplement situated 106–113 μm (β) from cloaca; 9.1–9.8% of total body length. Each supplement has a duct leading to an elongated subcuticular amorphous gland lying between the body wall and the vas deferens: distinct glands associated with each supplement could not be detected. Two opposed testes: anterior left, posterior right of gut.

Ovaries opposed, outstretched: anterior left, posterior right of gut. Vulva conspicuous; V = 50–51%. Vagina conspicuous, well cuticularised and with distal glands (Fig. 11f). Eggs elongated, about $35 \times 100 \mu\text{m}$ (Fig. 11e). Receptaculum seminis of mature females contain small oval sperm (Fig. 11e).

REMARKS. The original description of this species was given by De Coninck & Stekhoven (1933) based on a single female specimen from Belgium, although at first they believed it to be *S. quadripapillata* Filipjev, 1922. However, this opinion was later revised on finding a male and three more females, also from Belgium, which clearly differed from Filipjev's description, and Stekhoven (1935) gave the specimens a new name—*S. breviseta*. Stekhoven (1936, 1942) recorded the species twice more from the North Sea. Based on material from a sublittoral area near Helgoland, Lorenzen (1974) eventually synonymised *S. breviseta* with *S. pulchra* (G. Schneider, 1906), in the belief that he had found transition states between the two species in terms of R3 sensilla length, amphid size and precloacal supplement characters. However, Jensen (1981) concluded that Lorenzen's material did in fact contain distinct specimens referable to *S. breviseta*. Figure 8 is Dr Jensen's drawing of Lorenzen's (1974) *S. breviseta*, clearly showing the large $3\frac{1}{2}$ -turn amphid (as described by Stekhoven) and the large median piece of the gubernaculum, characters which differentiate the species from *S. pulchra*.

Sabatieria punctata (Kreis, 1924)

Figs 12–13

MATERIAL STUDIED. σ 1, σ 2 and φ 1 from Swansea Bay on slides BM(NH) 1981.12.125, 1982.7.69; 2 σ ♂ from Northumberland on slide BM(NH) 1980.5.3. Swansea Bay: specimens taken from dead *Diastylis rathkei* (Krøyer) (Crustacea: Cumacea), collected by Dr R. M. Warwick, May 1975. Northumberland: 2 miles east of Lynemouth, very fine sand at 35 m depth (Station A; Warwick & Buchanan, 1970).

MEASUREMENTS (in μm) AND DEMANIAN RATIOS

σ 1, σ 2 and φ 1 respectively. Total body length: 1160; 1095; 1160. Demanian ratio a: 36; 33; 28. Demanian ratio b: 8.5; 7.8; 7.9. Demanian ratio c: 11.1; 11.9; 10.6. R3 sensilla length: 4; 4; 4. Head diameter:

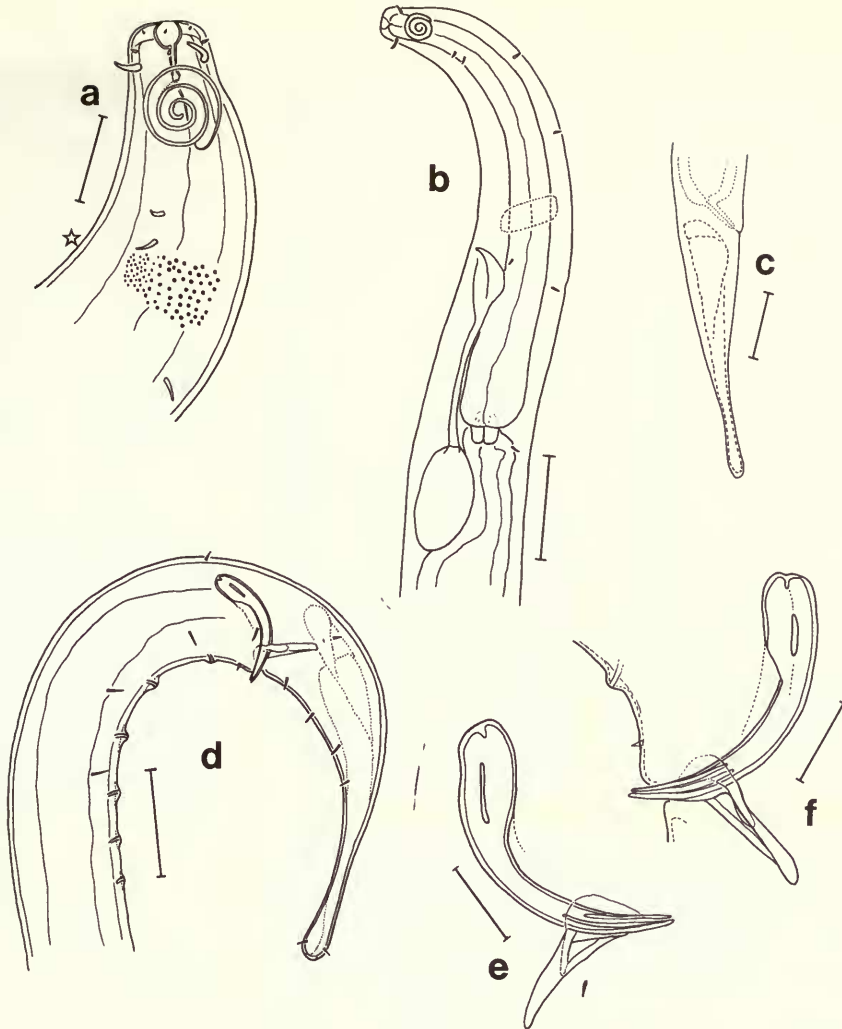


Fig. 12 *Sabatieria punctata* from Swansea Bay: (a) ♂1 head, star indicates ventral side; (b) ♂1 anterior region; (c) ♀ tail; (d) ♂1 posterior region; (e) ♂2 copulatory apparatus; (f) ♀1 copulatory apparatus. Bar scales: b, c, d = 30 μ m; a, e, f = 10 μ m.

9.5; 10.5; 10.5. Amphid diameter: 8.5; —; —. Amphid c.d.: 12; —; —. Oesophagus length: 136; 141; 147. Posterior oesophagus c.d.: 32; 30; 36. Maximum body diameter: 32; 33; 41. Anal body diameter: 28; 29; 28. Tail length: 105; 92; 110. Spicule length (chord): 31; 32. Cloaca to anterior supplement (α): 88; 114. Cloaca to anterior supplement (β): 117; 113.

DESCRIPTION. Posterior half of mid-body region only slightly narrower than anterior part. Cuticle punctated: lateral differentiation of larger dots in fewer rows. The lateral differentiation is most conspicuous in the oesophagus and the conical part of the tail, where some of the dots appear to be elongated (Fig. 13c): although the dots are rather irregularly arranged in the lateral field, just posterior to the amphid there are about 11 rows per 10 μ m and on the tail 8 rows per 10 μ m. The lateral dots in the mid-body region are smaller than those at the extremities but irregularly arranged (Fig. 13d). Just ventral to the lateral field, there are about 17–20 rows of dots per 10 μ m. In males from Swansea Bay, there is a pair of ventro-sublateral cervical setae and a single dorso-sublateral seta situated further posterior (Fig. 12a): in the Northumberland males, however, there is a pair of setae situated dorso-

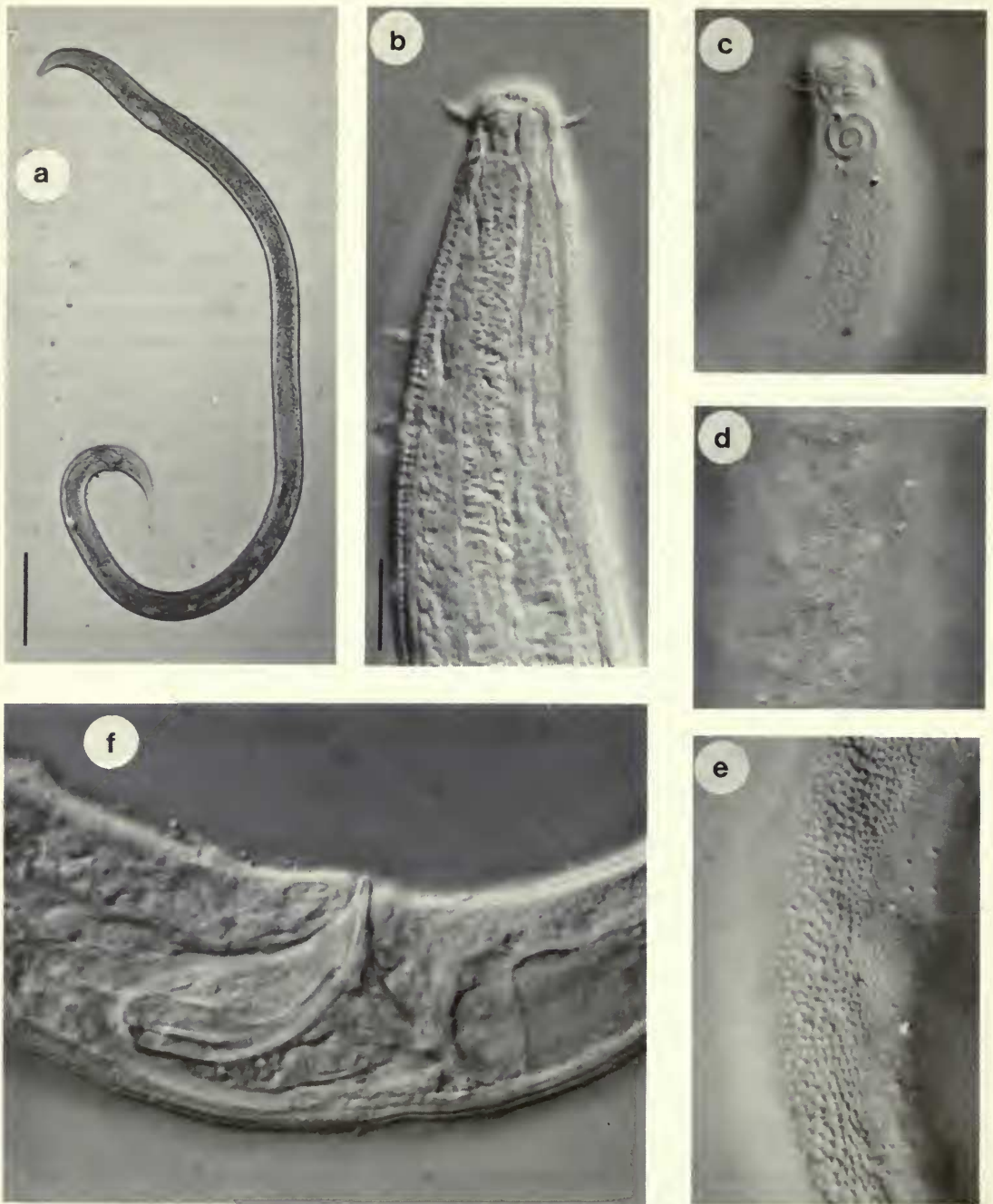


Fig. 13 *Sabatieria punctata* from Swansea Bay: (a) entire ♂; (b) anterior region showing R3 sensilla; (c) anterior region showing amphid and lateral cuticle pattern; (d) lateral cuticle mid-body; (e) lateral cuticle in cloacal region; (f) copulatory apparatus. Bar scales: a = 100 μm; for others, as in b = 10 μm.

sublaterally, as in *S. breviseta*. R1 and R2 sensilla conical. R3 sensilla 38–42% h.d. in both sexes. Amphids describe 3 turns: 70% c.d. wide in ♂1 (♂2 and ♀ amphids obscured). Nerve ring and excretory pore at about 50–55% and 60–65% of oesophagus length respectively. In males, supplementary lateral excretory cells present. Tail 3.2–3.9 a.b.d., conico-cylindrical: conical part about 70% of total with a short cylindrical section before the swollen tip.

Spicules equal, curved: 1.1 a.b.d. as chord; 1.3 a.b.d. as arc. Gubernaculum apophysis 12–14 µm long (about 40–45% of spicule chord length): a conspicuous median piece could not be detected. Ventral spine and six precloacal supplements: anterior supplement situated 105 µm (♂1) and 92 µm (♂2) from cloaca (β), 10.1 and 10.3% of total body length respectively. Two opposed testes: anterior left, posterior right of gut.

Ovaries opposed, outstretched: anterior right, posterior left of gut: V = 51%.

REMARKS. In almost all respects, the specimens appear identical to those described from the Øresund by Jensen (1979). There is some variation in the number of sublateral rows of punctations (per 10 µm) but the general pattern is similar.

S. punctata was until recently considered synonymous with *S. pulchra* (G. Schneider, 1906): indeed, Kreis's original (1924) description was such that it could fit almost any *Sabatieria* species with about six precloacal supplements. However, Jensen's (1979) redescription separates his *S. punctata* from *S. pulchra*. *S. punctata* is also similar to *S. breviseta* as redescribed here: the two species were found sympatrically in both the Swansea Bay and Northumberland material. Cuticle pattern, male amphid size and relative development of the supplements are the three most conspicuously different characters but, on the basis of the specimens available for study here, there appear to be minor differences in a number of others: compared with *S. breviseta*, *S. punctata* specimens have relatively slightly longer R3 sensilla (0.4 h.d. vs 0.3 h.d.), slightly less curved and shorter spicules (1.3 a.b.d. vs 1.5–1.6 a.b.d. as arc), less conspicuous median piece, slimmer tail and a different orientation of the ovaries to the gut (based only on one female *S. punctata*).

As *S. punctata* is now understood, the specimens described by Allgen (1935) and Stekhoven (1935) fit into the species (as pointed out by Jensen, 1979) but those of Timm (1952) from Maryland, U.S.A. clearly do not, since the cuticle has 'fine uniform punctation'.

Sabatieria longispinosa Lorenzen, 1972

Figs 14–15

MATERIAL STUDIED. 2♂♂ from Strangford Lough, N Ireland; slides BM(NH) 1982.7.76–77. 2♀♀ from South Bay, N Ireland; slide BM(NH) 1982.7.78. 3♂♂, 1♀, 2 juveniles from the Øresund; slides BM(NH) 1982.7.79–81. Strangford Lough: intertidal sandflat 3–5 cm depth, Station C (see Platt, 1977). South Bay: intertidal sand, 1–12 cm depth (see Boaden & Platt, 1971). Øresund: 15–16 m subtidal fine sand, 7–15 cm (collected by Dr P. Jensen, March 1978 and March 1979).

MEASUREMENTS (in µm) AND DEMANIAN RATIOS (of specimens from Strangford Lough, Northern Ireland only).

Males (♂1, ♂2 respectively). Total body length: 2440; 2495. Demanian ratio a: 104; 109. Demanian ratio b: 14.6; 14.9. Demanian ratio c: 26.0; 25.7. R3 sensilla length: 26; 26. Head diameter: 10; 11. Oesophagus length: 167; 168. Posterior oesophagus c.d.: 19; 20. Maximum body diameter: 22; 23. Spicule length (chord): 27; 26. Anal body diameter: 20; 21. Cloaca to anterior supplement (β): 83; 85. Tail length: 94; 97.

Females (♀1, ♀2 respectively). Total body length: 2650; 2790. Demanian ratio a: 98; 93. Demanian ratio b: 14.0; 16.0. Demanian ratio c: 23.5; 26.8. R3 sensilla length: 25; 23. Head diameter: 11.5; 11. Amphid diameter: 7; 7; Amphid c.d.: 12; 10. Oesophagus length: 189; 174. Posterior oesophagus c.d.: 27; 27. Maximum body diameter: 27; 30. Anal body diameter: 23; 23. Tail length: 113; 104. Vulva to anterior: 1585; 1580.

DESCRIPTION. The following morphometric data is based on the Irish specimens, unless stated otherwise. Elongated body. Cuticle annulated and finely punctated. Punctations may be difficult to detect mid-body: most distinct in anterior oesophagus and tail regions. Dots are slightly larger laterally than sublaterally, but are all more or less organised into transverse

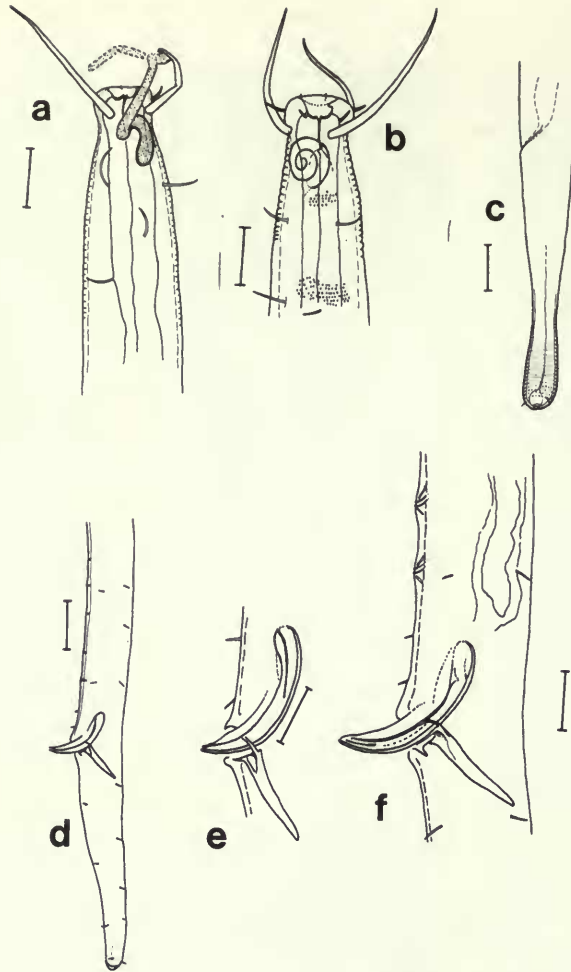


Fig. 14 *Sabatieria longispinosa* from Strangford Lough: (a) ♂1 head; (b) ♀1 head; (c) ♀1 tail; (d) ♂1 posterior region; (e) ♂2 copulatory apparatus; (f) ♂1 copulatory apparatus. Bar scales: c, d=20 µm; others=10 µm.

rows. There are fewer rows laterally than sublaterally in the anterior part of the oesophagus; for example, in one of the males from the Øresund, just posterior to the amphid there are 7 lateral rows per 10 µm and 14 dorso-sublateral rows per 10 µm. In one of the males from Strangford Lough, in the lateral field there are, per 10 µm, 9 rows immediately posterior to the amphids, 20 rows mid-body and 13 rows in the anterior part of the tail. The punctuation is particularly noticeable on the tail-tip of females (Fig. 14c). In males from the Øresund, quite conspicuous sublateral cuticle pores were observed in the cervical and caudal regions (Fig. 15d). Two sublateral pairs of 6–8 µm cervical setae are situated about 2 and 3 h.d. from anterior, followed by sublateral files of shorter somatic setae. R1 sensilla papilliform. R2 sensilla 2–3 µm, setiform. R3 sensilla 26 µm in males (2.4–2.6 h.d.) and 23–25 µm in females (2.1–2.2 h.d.). In the male specimens studied here, the corpus gelatum was displaced so that the exact dimensions or number of turns could not be determined. However, a male described by Riemann (1966) from the Elbe estuary had $3\frac{1}{4}$ turns and was just over 90% c.d. The amphids of Irish females are 7 µm wide, 60–70% c.d. with almost $2\frac{1}{2}$ turns. Excretory pore at 70–75% of oesophagus length. Tail 4.5–5 a.b.d. but there is sexual dimorphism in the shape: females have a much more conspicuously swollen tip (Fig. 14c).

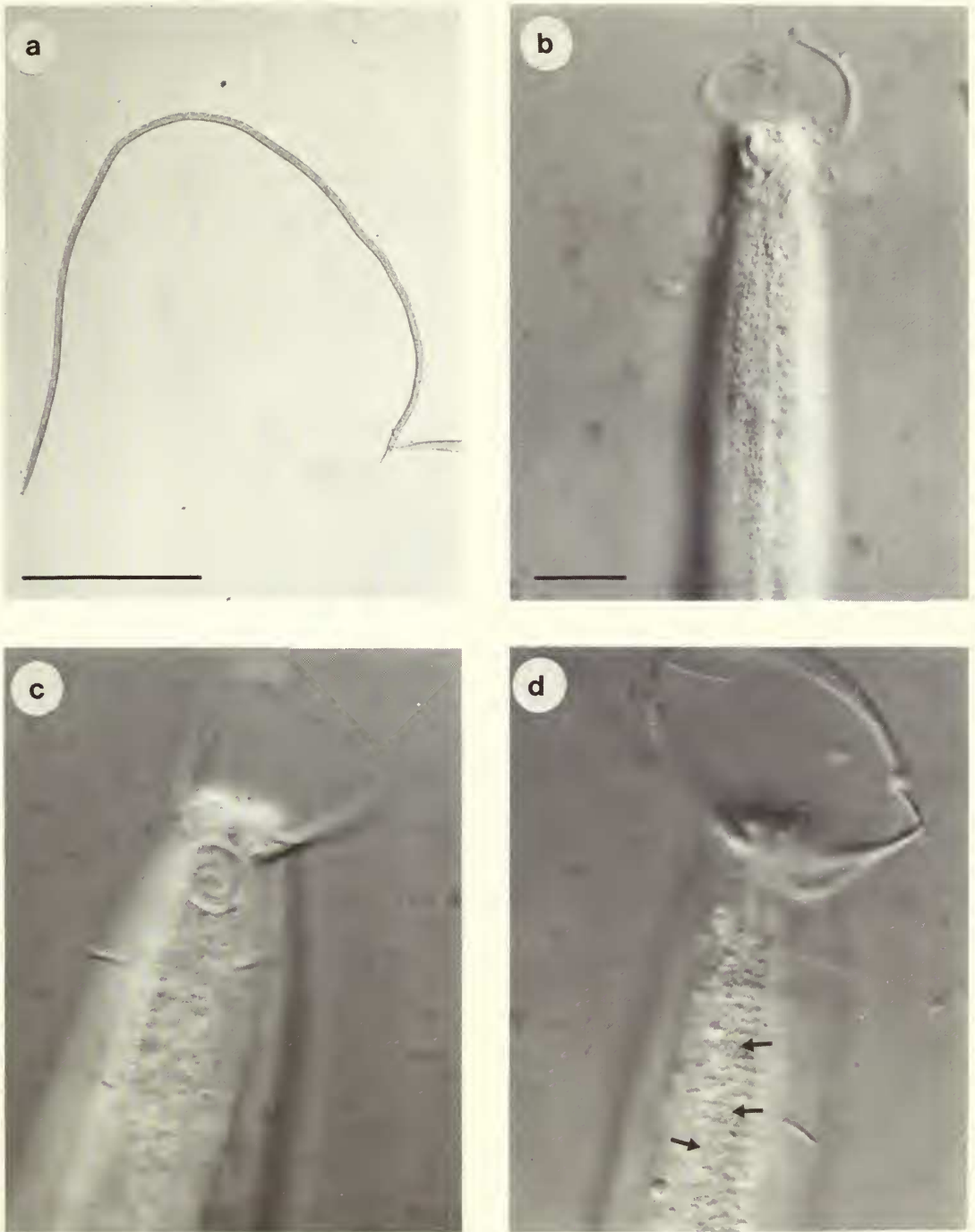


Fig. 15 *Sabatieria longispinosa* from Strangford Lough (a-c) and the Øresund: (a) entire ♂; (b) ♂ anterior showing cuticle pattern; (c) ♀ head; (d) ♂ head showing cuticle pores, some arrowed. Bar scales: a = 500 μm; for others, as in b = 10 μm.

Spicules equal, curved; 1.2–1.4 a.b.d. (chord). Gubernaculum with paired apophyses, 17–19 μm long (60–70% of spicule chord length). Two ventral precloacal spines, 8–10 μm and 18–19 μm from cloaca. Five more or less equally spaced tubular precloacal supplements, 11–17 μm apart: anteriormost 83–85 μm (β) from cloaca, 3.4% of total body length. Two opposed testes: anterior left, posterior right of gut.

Ovaries opposed, outstretched: anterior left, posterior right of gut. $V=57\text{--}60\%$. Eggs elongated.

REMARKS. The females described here were originally reported as *S. armata* Gerlach, 1952 (Boaden & Platt, 1971). However, *S. armata* females have more slender tails (6.2–7.3 a.b.d.) and the males have 9 precloacal supplements (anteriormost 4.9% of total body length from

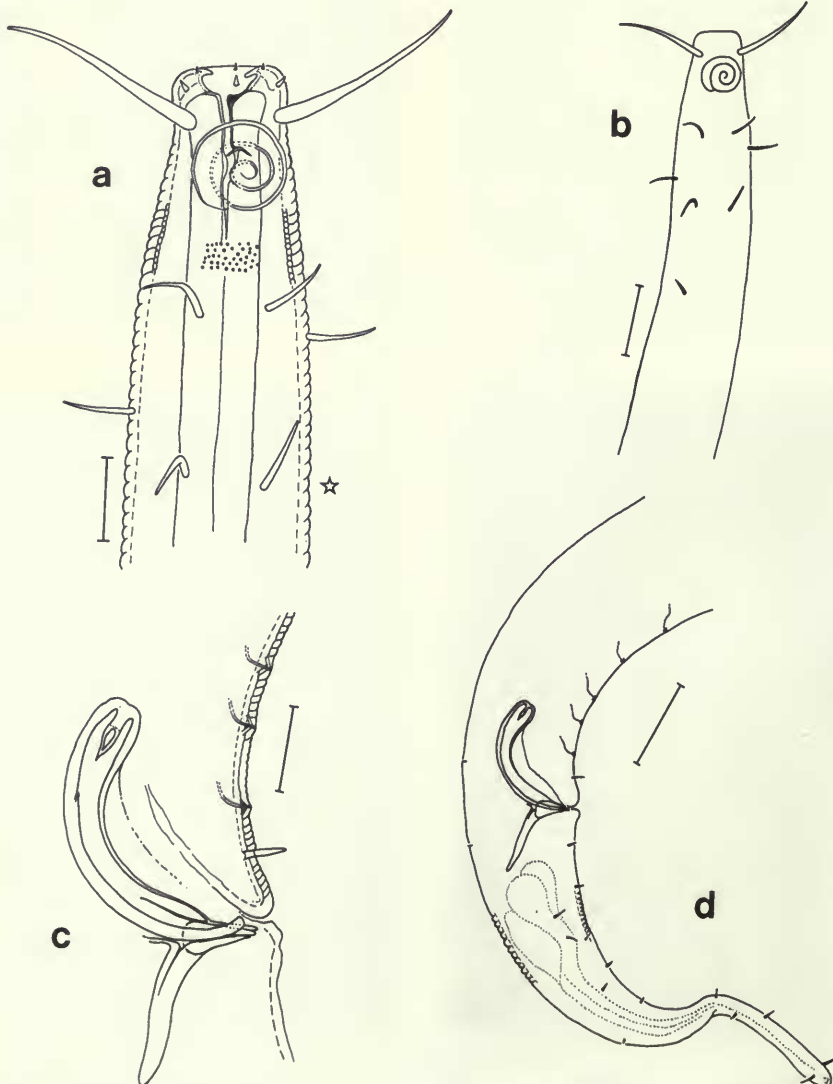


Fig. 16 *Sabatieria elongata* from Firth of Clyde: (a) $\sigma 1$ head with part of amphid shown hatched to avoid obscuring buccal cavity and star indicating ventral side; (b) $\sigma 1$ anterior region to show disposition of cervical setae; (c) $\sigma 1$ copulatory apparatus; (d) $\sigma 1$ posterior region. Bar scales: d = 25 μm ; b = 20 μm ; a, c = 10 μm .

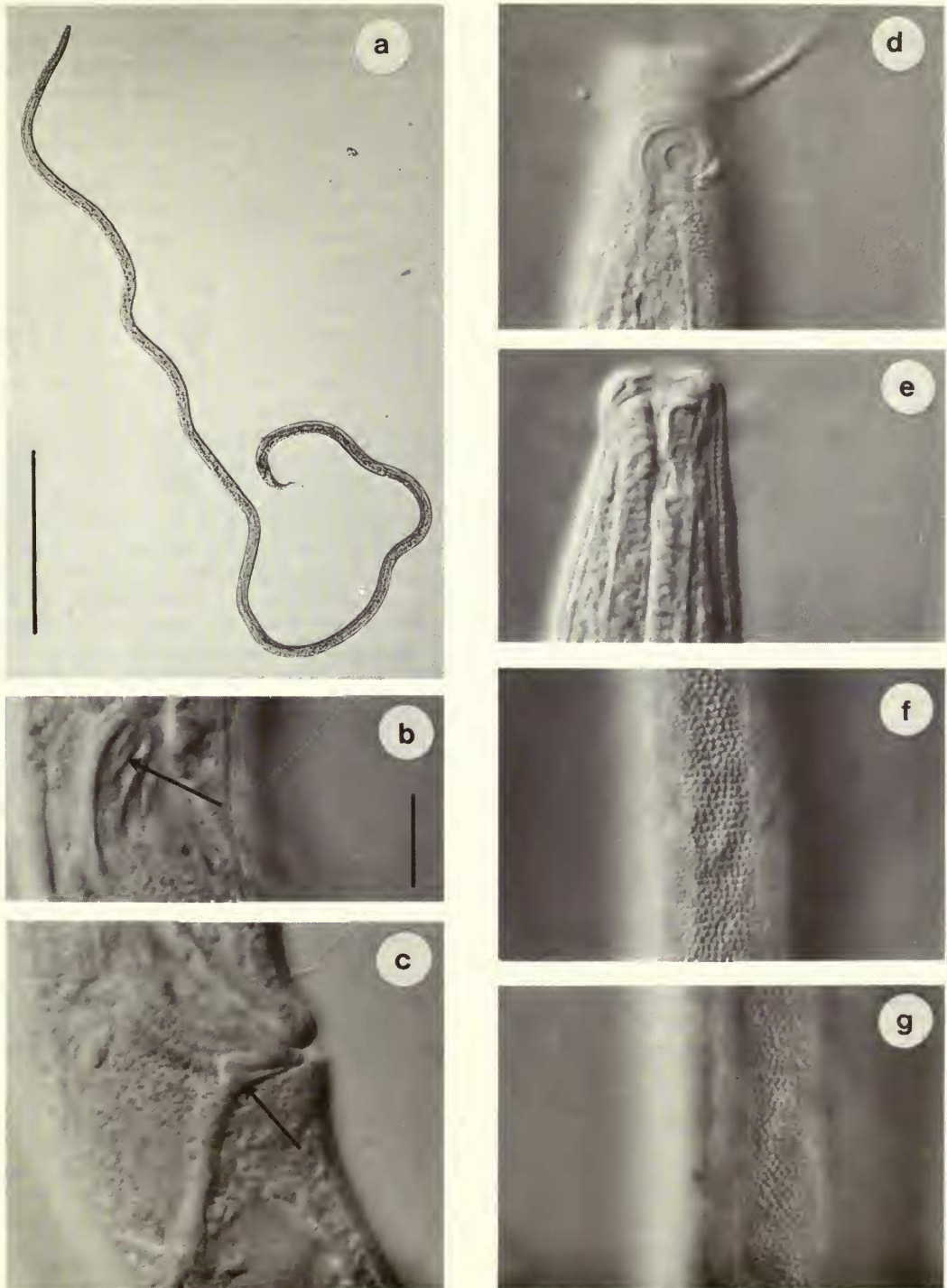


Fig. 17 *Sabatieria elongata* from Firth of Clyde: (a) entire σ ; (b) proximal part of spicule showing median list (arrow); (c) cloacal region showing triangular guiding piece (arrow); (d) anterior region showing amphid; (e) anterior region showing buccal cavity; (f) lateral cuticle in anterior oesophagus region; (g) lateral cuticle in mid-body region. Bar scales: a = 500 μ m; for others, as in b = 10 μ m.

cloaca). The specimens are identical to *S. longispinosa*, as redescribed by Riemann (1966). My attention was drawn to the cuticle pores and the conspicuous punctation on the tip of the female tail by Dr P. Jensen (pers. comm.): these features had not hitherto been reported.

Sabatieria elongata Jayasree & Warwick, 1977

Figs 16–17

MATERIAL STUDIED. Lectotype ♂1 (being the ♂1 of Jayasree & Warwick, 1977: their Fig. 6a–c) and paralectotype ♂2, both on slide BM(NH) 1975.1184. Low water, Irvine Bay, Firth of Clyde, Scotland. Collected by Dr K. Jayasree, August 1974.

MEASUREMENTS (from Jayasree & Warwick, 1977)

♂1: — 220 M 3433
 $\frac{15 \quad 32 \quad 39 \quad 34}{3575 \mu\text{m}; a=92; b=16.3; c=25.2; S=31 \mu\text{m}}$

♂2: — 225 M 3280
 $\frac{15 \quad 31 \quad 38 \quad 34}{3430 \mu\text{m}; a=90; b=15.3; c=22.9; S=31 \mu\text{m}}$

DESCRIPTION. The following information is supplementary or additional to the original description. Cuticle annulated, most noticeably in the anterior oesophagus and caudal regions, and punctated. The punctation is arranged more or less in transverse rows; but there are fewer rows of larger dots in the lateral field, beginning immediately posterior to the amphids, and they tend to be more irregularly arranged. The lateral dots are most noticeably larger in the anterior oesophagus region and the conical part of the tail. Just posterior to the oesophagus, there are 13–14 rows of punctations per 10 μm in the lateral field but 20–21 rows medial to this. In both specimens, there was a similar bilateral arrangement of long cervical setae (Fig. 16b): sublateral pairs at 25–30 μm and 47–51 μm from the anterior with submedian pairs between them, followed by a single dorso-sublateral. Short but sparse sublateral somatic setae are present throughout the body posterior to the cervical setae, with extra subventral setae on the male tail. The ventral section of the cup-shaped part of the buccal cavity is more heavily cuticularised than the dorsal section, and at one depth of focus resembles a tooth (Fig. 16a). The tubular, non-expanded posterior part of the buccal cavity has a weak cuticularised projection at its base. Amphid describes 3 turns.

The distal end of the copulatory apparatus is not easy to analyse, but the spicule tips appear to be double and the gubernaculum has a solid central triangular guiding-piece (Fig. 17c). A feint ventral ala can be detected beginning near the proximal end but it could not be followed to its termination. The proximal end of the spicule has a conspicuous short median list (Fig. 17b). The lectotype male has 15 tubular precloacal supplements each terminating in a small cone. In the two specimens available, the posterior three supplements are somewhat more closely spaced: the posteriormost 5 supplements are spaced 10+7+14+14 μm apart in ♂1 and 13+15+21+18 μm apart in ♂2. In ♂1 the anterior supplement is situated 290 μm anterior to the cloaca (β); 8% of the total body length. Testes: anterior left, posterior right of gut.

REMARKS. ♂1 is here chosen from the original syntype series as the lectotype: it is in good condition, was the original figured specimen and has 15 supplements, the mid-point of the range of 13–17 quoted by Jayasree & Warwick (1977). The only points of difference compared with the original description are: 1. conspicuous lateral differentiation is present; 2. somatic setae are present throughout the body; 3. the undulating spicule alae are here interpreted as being the ventral cloacal wall.

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